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ABSTRACT

ORI, Inc., and SilverPlatter, Inc., have joined together in a joint venture to offer the ERIC database to the public on compact laser disc (CD-ROM). Data from both "Resources in Education" (RIE) and "Current Index to Journals in Education" (CIJE) will be offered on a single disc from January 1983 to the present (with the disc being updated every quarter). Data prior to 1983 will be offered on archival discs (two for RIE; one for CIJE). This case study reviews the various reasons why ERIC is interested in CD-ROM as a method of data dissemination and the reasons ORI chose to link with SilverPlatter in offering such a service. Some of the early experiences in developing the product are related: acquiring market information, configuring the product, developing the retrieval system, alpha testing, allocating corporate responsibilities, pricing, etc. It is noted that ERIC satisfies all five factors that have been cited as determining whether a product is likely to be successful if delivered on CD-ROM technology: (1) large volume of data; (2) stable data not requiring frequent updates; (3) geographically dispersed user community; (4) most users have access to microcomputers; and (5) additional processing enhances the value of the data delivered. (Author/JB)

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CD-ROM Based Information Dissemination

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ERIC on Compact Disc (CD-ROM)
(A Case Study)

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

ERIC on Compact Disc
(A Case Study)

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IGC Handout (50 copies)

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I. Introduction

My name is Ted Brandhorst. I am the Director at the ERIC Processing and Reference Facility. You may have heard the name "ERIC" before, but if past experience is any guide, you probably don't know a lot about how ERIC is structured and how it works.

In order to give you the "ERIC on Compact Disc" case study, it will be necessary for me to first give you a bit of background about ERIC, the ERIC database, what ERIC is trying to do, and how compact discs fit into ERIC's mission and objectives.

II. Background

A. The Educational Resources Information Center (ERIC)

ERIC is an acronym standing for Educational Resources Information Center. ERIC is an information system sponsored by the Office of Educational Research and Improvement (OERI) within the U.S. Department of Education. OERI is the new (as of October 1985) name for the old National Institute of Education (NIE).

ERIC was begun in 1966 and will have its twentieth birthday in November of this year. It started in the old Office of Education (OE), moved to NIE when that was formed in 1974, and now, hopefully, will be a cornerstone of the new OERI as that unit attempts to refurbish the image of educational research.

Organizationally, ERIC is a decentralized system. It is comprised of a small central unit within OERI known as "Central ERIC". This unit is composed of less then 10 people, responsible for funding, setting policy, and monitoring the performance of a group of contractors and other arrangements that accomplish the work of ERIC.

These contractors are made up of a set of sixteen (16) Clearinghouses, each responsible for a major segment of the field of education, and two (2) for-profit contractors that operate the central editorial and database management facility and the central micrographics and document delivery facility, respectively.

The Clearinghouses are each located at a university or professional association that has a natural interest in the particular segment of the field of education for which they are responsible. For example, the ERIC Clearinghouse on Handicapped and Gifted Children is located at the Council for Exceptional Children (CEC); the ERIC Clearinghouse on Languages and Linguistics is located at the Center for

Applied Linguistics; the ERIC Clearinghouse on Reading and Communication Skills is located at the National Council of Teachers of English; and so on. Each Clearinghouse is responsible for gathering together the documents and journal articles that deal with topics in their area of coverage. They are also responsible for processing this literature for the ERIC database. By processing is meant cataloging, indexing, abstracting, and keying for data entry.

When this aspect of ERIC Clearinghouse work has been completed, the data and the documents are sent to the ERIC Processing and Reference Facility, a centralized editorial and database management facility. The data are transmitted online; the documents are mailed.

The ERIC Facility is operated on contract by ORI, Inc. The ERIC Facility edits the data for consistency and conformance to various standards and guidelines, processes some of the data through computerized authority list checks, and, in general, assembles the data for publication in various forms and for dissemination in machine-readable form and online. It is from the Facility that the tapes come that result in ERIC's two monthly abstract journals. It is from the Facility that the data flows to the online vendors: DIALOG, BRS, SDC. The Facility maintains the Thesaurus of ERIC Descriptors, the Identifier Authority List, the ERIC Processing Manual, and serves as a general coordinator of the decentralized operation.

When the ERIC Facility is through with any given month's worth of documents (about 1,000 documents), it forwards these documents (together with the final database record) to the ERIC Document Reproduction Service (EDRS), operated on contract by Computer Microfilm Corporation (CMC). EDRS prepares microfiche for each of the documents and distributes them to some 750 subscribers. EDRS also processes all on-demand orders for ERIC documents on microfiche or in reproduced paper copy.

Other organizations that play a role in the ERIC system are GPO, which publishes the ERIC abstract journal Resources in Education (RIE), Oryx Press, which publishes the ERIC abstract journal Current Index to Journals in Education (CIJE), and the online vendors, DIALOG, BRS, and SDC, who offer the public online access to the ERIC database. This last group of organizations are not ERIC contractors. They help to disseminate the ERIC data for whatever they can make in the process.

B. The ERIC Database

The various components of the ERIC system working in concert, produce about 20,000 journal article bibliographic citations a year and about 15,000 document bibliographic citations a year. The 20,000 journal article records are announced in the monthly abstract journal Current Index to Journals in Education (known as CIJE). The 15,000 document records are announced in the monthly abstract journal Resources in Education (known as RIE). These two files together make up what is called the ERIC database.

Through 1985, the database contained 323,036 CIJE records and 253,126 RIE records, for a grand total of 576,162 records. All of these records have been announced in printed abstract journals, all are up on the online systems and can be accessed by terminal, and in some 98% of the cases the full text documents on which the records are based are available to users on microfiche.

The document records, containing as they do full abstracts, are about 1,800 characters in length. The journal article records, containing only 50-word annotations, are about 500 characters in length.

Through 1985 the ERIC database contained a total of approximately 618,000,000 characters and is growing at a rate of approximately 36,000,000 characters a year.

ERIC is, in effect, the national bibliographic database for the field of education. It doesn't handle hardback books, but it handles most everything else. It is one of the most popular databases (if online activity is the measure) ranking fourth behind LEXIS, CAS, and MEDLINE. It appears to be the most popular of the various social science databases, logging about three times as much usage as the second place Psychological Abstracts.

C. Distribution/Dissemination of the ERIC Database

From the very beginning, ERIC's mandate has been to disseminate its data as widely as possible and at the lowest possible price to the user. This has led ERIC to try a wide variety of output products: abstract journals, microfiche, online access, magnetic tapes, specialized bibliographies and information analysis publications, microcomputer floppy discs, etc. This has also led ERIC to work for the lowest possible price to

the public. Resources in Education costs only $56 a year, a fraction of what most abstract journals cost. The EDRS microfiche contract is awarded on the basis of lowest price to the public and its current price of 75 cents per microfiche title is far and away the lowest to be found anywhere. ERIC deliberately does not require a royalty from the online vendors in order to keep the price to the user at a rock bottom low.

The theory is that the ERIC data are gathered in the first place for the general good and for the improvement of the educational process so central to this society. These data must be distributed widely in order to have an effect on the educational process, in order to have an effect on what goes on in the classroom and other educational situations. Furthermore, since the educational community is not a particularly well-to-do community, it is important to keep ERIC's prices low in order to foster the broad dissemination that is so desirable and so critical to ERIC making a difference.

For these reasons, ERIC is widely touted as a public domain database whose use in as many ways as people can conceive is both permitted and encouraged.

III. Why Compact Disc for ERIC?

With the context now established, it is not difficult to see why ERIC, or those working for ERIC, would be interested in putting ERIC on compact disc.

A. To Accomplish ERIC's Dissemination Mandate

Such a move would obviously help to accomplish ERIC's basic mandate of scattering its data far and wide.

B. To Give ERIC's Users the Benefits of Compact Disc Technology

As a totally self-contained system, it would be applicable to those situations where telecommunications were non-existent, difficult, or expensive. As a stand-alone system totally under the control of the user who obtains it, it would also be a fixed cost method, permitting uncontrolled and unlimited use for the known, budgetable subscription amount.

C. To Keep ERIC Up-to-Date With Respect to New Technology

Within its limited resources, ERIC tries to keep relatively up-to-date with the technology. ERIC uses state-of-the-art photocomposition technology for its abstract journals. It employs advanced step-and-repeat cameras and blowback copiers in its micrographics operations. It takes advantage of the inventiveness of the online vendors. It has interconnected the Clearinghouses with an electronic mail system. It is encouraging the rapid proliferation of microcomputer technology throughout the Clearinghouse network. Many developments are promoted by an internal ERIC Technology Committee. The ERIC Technology Committee focused on CD-ROM about two years ago and encouraged ERIC to move in that direction. The venture ORI and SilverPlatter are jointly making is partly a response to that encouragement.

D. To Enhance ORI's Reputation and Role as a Technical Advisor to ERIC

In addition to operating the ERIC Facility, ORI acts as a technical advisor to Central ERIC on matters within its skill areas. ORI has graduated ERIC through several data entry systems over the years at the appropriate junctures to the present direct online input system. ORI has moved ERIC to new and more advanced photocomposition systems as the need arose. ORI established the current electronic mail system used by the Clearinghouses. ORI has helped ERIC develop new authority lists, new products, new forms, new procedures, etc. ORI has helped ERIC distribute its data to the public via magnetic tape for several years on a no-cost-to-the-Government and least-cost-to-the-public basis.

Distributing ERIC data to the public via CD-ROM is in a way a natural continuation of ORI's role as distributor of the ERIC data or magnetic tape and its role as a technical advisor helping ERIC to keep up with technological advances. ORI wants ERIC to regard it as able to do these things and therefore, it seemed important for ORI to seize the initiative provided by CD-ROM rather than let some other organization seize it.

E. To Make a Profit

And lastly and most obviously, it looked like there was money to be made in CD-ROM. ORI was the most experienced organization around as far as the ERIC database went, so why shouldn't ORI try to capitalize on that expertise and know-how.

IV. Formulating an ERIC CD-ROM Team

Once the decision was made to get into the CD-ROM business, the next question was "with whom?". ORI did not have internally the expertise for creating such discs and it was becoming rapidly apparent that a lot of organizations had seen CD-ROM coming and had gone ahead and generated this very expertise.

We were beginning to be visited and courted by such organizations and we began to realize that not every group was a suitable partner for ORI.

There were those who simply wanted to act as a service bureau. Give them a tape and $10,000 and they would give you back a box full of compact discs. They wanted to be completely in the background, not involved in the marketing, sales, troubleshooting, equipment, user services, etc. And they wanted their money up front.

There were those who were willing to do more in the way of a partnership, but who wanted a guarantee of a certain number of subscribers in order to stay in the business. Either their dreams were too grandiose or their willingness to stay the course was questionable.

There were those who wanted to simply get the ERIC data and go it alone. They wanted ORI to consult for them, but not to get involved with them in a revenue-sharing partnership.

There were other questions to be answered as well: Was the retrieval system offered adequate? Was the company (or the project) capitalized sufficiently to stay the course? Was the development effort far enough along so that actual products would not be too far away?

We talked with several groups, but it wasn't until we talked with SilverPlatter that we felt we had found the philosophy that fit with our own.

SilverPlatter was interested in developing a service that would offer a stable of databases all accessible by the same basic retrieval package. The databases they were signing were predominantly in the social sciences, so users might well be interested in multiple subscriptions. SilverPlatter didn't insist on money up front. They were willing to wait for the subscription revenues to start flowing. They were interested in a partnership arrangement where the information provider provided the expertise on the database and on the marketplace and SilverPlatter provided the expertise on the hardware and software (the retrieval system).

The timing was also right. SilverPlatter walked in the door at a time when ORI felt that it needed to make a move or risk falling behind certain vigorous entrepreneurs that were out scouting around for databases. SilverPlatter, in turn, needed a large "name" database to headline its U.S. marketing efforts and to serve as a nucleus around which other databses might gather.

All these factors converged and ORI and SilverPlatter signed an agreement to get together on January 1985 and began working together immediately.

V. Steps Along the Way

A. Agreements and Contracts

The first paper signed jointly by ORI and SilverPlatter was simply an agreement to get together, a letter of intent as it were. The actual contract took much longer to negotiate and had to cover a multitude of matters such as: the division of responsibilities, the product design, pricing, the retrieval system specifications, conversion specifications, alpha test sites, schedules, penalties and what if's, and the division of revenues. The contract took much longer to negotiate and was just recently finalized. While all this was going on, ORI and SilverPlatter, of necessity, continued to work together to bring the product to market. It felt and it still feels as if we are in a race and that it is important to cross the line either first or not very far behind.

B. Division of Labor

One of the first matters to be settled was the Division of Labor, i.e., our respective areas of responsibility. After some discussion, this was documented as you see it in Figure .

ORI was responsible for database generation and provision and all aspects of accounting (order processing, customer records, billing (and follow-up), disbursements, etc.). ORI and SilverPlatter together were jointly responsible for advertising and marketing. SilverPlatter was responsible for software provision and maintenance, disc production, equipment, and order fulfillment (in the sense of physically distributing both discs and equipment).

C. Market Information/Surveys

Since ORI had the records of several years of selling ERIC data on magnetic tapes and had also done several directories for ERIC of organizations maintaining ERIC microfiche collections or providing ERIC search services, it was early on decided that ORI should have responsibility for gathering information from the marketplace concerning how the product should be configured, how it should be updated, and what kinds of prices the market would bear.

Figure illustrates the survey form that ORI developed and mailed to about 1,800 organizations regarded as the market "universe", or at least the best handle we could get on it at the time. As you can see, there were questions about subdividing the database, about frequency of update, about pricing, about search capabilities, and about various other matters.

We received back about 180 responses. I understand that a 10% return is considered very good for this kind of thing. We also put out a news release. We publicized what we were doing amongst the ERIC family and let them spread the word further. We spoke and exhibited at a few conferences in 1985 (ALA Mid-Winter, IIA, NFAIS) and made plans to do more of that in 1986 when the product was further elaborated (e.g., ACRL, SLA, National Online, ALA Annual). We wrote articles for information periodicals.

The 180 responses were analyzed in some detail. Every answer to every survey question was keyed into a SAS program and sorted, displayed, and statistically analyzed. I can't provide you with the results here, but the data constituted some fairly substantial information about the marketplace and guided many of our later discussions.

D. Product Design/Configuration

Product design discussions concentrated on how to subdivide the database. It wouldn't all fit on one disc. We had two kinds of files. Just exactly how should we configure it?

After much debate, we decided to create a single current or contemporary disc that would contain both the RIE and CIJE files for the past three full years plus the year in progress, i.e., 1983-1985 plus 1986 as it builds. Such a disc could be updated quarterly without

re-doing massive amounts of data each time. Such a disc could hold new data up through 1988 or 1989, before running out of space. Such a disc, by containing both RIE and CIJE, would be convenient for the users and was responsive to the survey results.

A current disc was a "must". Many searches are restricted to the last five years in order to keep the output volume within convenient dimensions. Very few searchers search only material older than five years. We felt that a current disc would attract any real potential subscribers. Then, after we had demonstrated the size of the market, generated some revenues, and acquired some real life feedback, we could offer the older data in the form of "archival" discs -- one-time purchase items that once created would not require subsequent update unless there were some major action affecting the entire database both old and new. The substantial expense of the archival discs would not be incurred unless the overall market materialized and if the users subscribing to the current disc indicated they would buy the ERIC backfile.

Just about every database generator is partitioning or segmenting their database in some clever way for the CD-ROM push. This was our particular way. Everybody is being a little bit cautious. Nobody wants to hurt their print product sales or, even more importantly, hurt their revenues from online, at least not until they have established a proven alternative revenue flow.

E. Conversion/Inversion Specifications

SilverPlatter and ORI got together at a stage where SilverPlatter had already invested nearly two years in the development of a CD-ROM retrieval system and related file conversion/inversion software. It is too bad that we didn't get together at the beginning of those two years. A lot of time has been spent modifying and tuning the file conversion software so that the resultant CD-ROM database can provide the kind of retrieval we believe our users want and need.

There is a table in your handout entitled "ERIC Database Conversion/Inversion Specifications". This is the latest version of what is going to happen to the ERIC file when it is put on SilverPlatter's CD-ROM discs. It is difficult to explain why the decisions represented by such a table should take so much time to achieve, but we seemed to debate virtually every

field. The software had not always provided for the exact situations encountered in the ERIC database. We asked for changes. Some were accepted and some were resisted, at least initially. We will not end up with everything we want, but we will get most of what we want and all the really important items.

An example of a major change that occurred as we talked is the gradual shift from one huge inverted index into which the contents of all fields were dumped, to one large index supplemented by separate indexes for selected fields. Certain fields containing numeric data and other fields based on limited authority lists (e.g., languages) we did not feel it was appropriate to dump into a large general basic index or glossary, as we call it. SilverPlatter had to be convinced but they remained open-minded about it and began to see the value of the approach we recommended, especially as they gained experience with retrieval from discs loaded to full capacity.

An example of a change that will be made, but that hasn't been made yet is the selective inversion of subfields in a field that contains multiple subfields. For example, we want to retrieve on the journal name in subfield 1 but not on the complex journal citation data in subfield 2. Unfortunately the only way right now we can keep the citation data out of the inverted file is via the stopword list. This matter won't affect the user significantly, but it will affect the size and content of the inverted file.

These are just two examples of the problem of marrying a database to a retrieval system when the two came together already full grown. As in any marriage there are some adjustment problems.

F. Retrieval System Capabilities

The proprietary SilverPlatter retrieval system is a powerful system and will allow you to do just about any kind of search that you will want to do or that you could do on the online systems.

I am not going to get into all the retrieval capabilities in detail. These are explained well in the Library Hi Tech article in your handout. Suffice it to say that SP has the Boolean operators: AND, OR, and NOT

and it has the capability of handling parentheses and nested parentheses. SP has the textual operators: WITH (for words in the same field), NEAR (for words in the same sentence), ADJACENT (for words next to each other) and it will be able to specify degrees of adjacency, e.g., 1 word, 2 words, etc. SP can display all of the fields or a user-defined subset of the fields.

There are things it does that we don't like and hope to get removed. For example, it has inserted hyphens between words that it wants to treat as bound phrases (e.g., Personal names, journal names), which is alright, but it insists on displaying those same inserted hyphens in the output records. We want the hyphens required only as retrieval devices and not showing in the output. They weren't there originally and therefore shouldn't be let in to mess up the output records.

There are things it won't do that we wish it could. We don't have the ERIC Thesaurus and its cross-reference structure integrated into the system in any way.

But in general we are satisfied. The history of the retrieval system has resembled the history of the database conversion. SilverPlatter has worked with its information providers over the past year to adjust their retrieval system until it is truly the kind of sophisticated system that users are demanding these days.

G. Alpha Test Sites

Alpha Test sites are supposed to provide the last real life user test of the product before final modifications are made and the product is delivered to the consumer. Alpha Test sites are supposed to find the final "bugs" so that they can be removed and to recommend the final needed improvements so that they can be inserted.

We would like to have had numerous Alpha test sites scattered all over the country and encompassing every kind of institution. Practical considerations, however, dictated that we go with a small compact group of sites physically located so that we could get to them frequently, easily, and quickly from our respective corporate locations. ERIC has four Alpha test sites. These sites will be provided the "current" disc and a data disc drive on or around May 27 (they already

necessary IBM-PC and desirable printer) and will be asked to use the system as much as possible during the month of June, feeding back reactions, comments, findings, problems, and malfunctions to ORI/SilverPlatter as they occur. June is not the ideal month for this, admittedly, but we cannot afford to just wait out the summer.

Alpha test feedback will be used in July to make final system adjustments. If all goes well and if we adhere to this schedule, we will be distributing the first discs to subscribers by the end of July.

H. News Releases, Flyers, Letters, Status Reports, Order Forms

Are all part of the apparatus necessary to the process of bringing a product to market. ORI and SilverPlatter have worked on these jointly and copies of many of these items are contained in the handout packet pertaining to this session.

I. Publicity (Articles, Conference Exhibits, Advertising)

There have been only a couple of articles on SilverPlatter, one of which, from Library Hi Tech, is included in your handout. We have exhibited at several conferences. The 1986 schedule is provided as the last page of the recent letter/status report sent to the 200 respondents to our survey. The conferences include: ALA, ACRL, SLA, ASIS, MLA, AALL, AASL, National Online, IIA, and PLA. At these conferences there is either a general SilverPlatter booth or there is a SilverPlatter component to an information provider's booth. Advertising has been slow to get started. There have only been a couple of half-page ads, one of which is in the handout. Advertising will increase as the product actually materializes, but we think that most of the sales will come about not through mass advertising, but through direct contacts with the organizations we already know are the universe of potential subscribers.

J. Documentation and User Manuals

Documentation and User Manuals are, unfortunately, behind schedule. SilverPlatter is responsible for the retrieval system documentation and this will probably be ready first. ORI is responsible for the database documentation and will probably be late providing it. Fortunately, most of the prospective users are already fairly familiar with the ERIC database, making this lateness not a crucial factor in making use of ERIC on CD-ROM system. The built-in tutorial and help screens will compensate greatly for any printed documentation lateness.

Closing Remarks

In a recent article in Electronic Publishing and Bookselling (EPB), the consultant Ron Henderson cited the five factors that determine whether a product is likely to be successful if delivered on CD-ROM technology. These five factors are:

1. Large Volume of Data
2. Stable Data Not Requiring Frequent Updates
3. Geographically Dispersed User Community
4. Most Users Have Microcomputers
5. Additional Processing Enhances the Value of the Data Delivered

ERIC statisfies all five of these factors and we are looking forward to a successful product.